

CLAIMS

We claim:

1. A dialog manager for use within a spoken dialog service, the dialog manager generated according to a method comprising:
 - selecting a top level flow controller;
 - selecting available reusable subdialogs for each application part below the top level flow controller, the reusable subdialogs being isolated from application dependencies;
 - developing a subdialog for each application part not having an available subdialog; and
 - testing and deploying the spoken dialog service using the selected top level flow controller, selected reusable subdialogs and developed subdialogs, wherein the top level flow controller, reusable subdialogs and developed subdialogs interact independent of their decision model.
2. The dialog manager of claim 1, wherein the subdialogs manage mixed-initiative conversations with a user.
3. The dialog manager of claim 1, wherein application dependencies are declared outside of the subdialogs.
4. The dialog manager of claim 3, wherein the application dependencies are part of the top level flow controller.
5. The dialog manager of claim 1, wherein the available reusable subdialogs are selected from a group related to a dialog to obtain the following information: telephone number, social security number, account number, address, and mixed initiative dialogs.

6. The dialog manager of claim 1, wherein an available reusable subdialog is an input subdialog.
7. The dialog manger of claim 6, wherein the input subdialog further comprises a confirmation component.
8. The dialog manager of claim 1, wherein the subdialogs provide information to the user without receiving user input.
9. The dialog manager of claim 6, wherein the reusable input subdialog handles silence, rejection, low confidence natural language understanding (NLU) scores and explicit information in an input dialog with a user.
10. The dialog manager of claim 9, wherein the reusable input subdialog presents at least one pre-assigned prompt to the user in special circumstances.
11. The dialog manager of claim 10, wherein the reusable input subdialog presents a confirmation prompt to the user if an NLU value is returned with a low confidence score.
12. The dialog manager of claim 6, wherein the input subdialog includes input values that may be selected from the list including: input prompt, yes or no response, yes value name, no value name, silence category, reject category, confidence threshold and explicit confirm.
13. The dialog manager of claim 1, wherein an available reusable subdialog is a billing subdialog.
14. The dialog manager of claim 1, wherein an available reusable subdialog is a credit card subdialog.

15. The dialog manager of claim 1, wherein the top level flow controller is a recursive transition network (RTN) flow controller.
16. The dialog manager of claim 15, wherein the available reusable subdialogs are RTN flow controllers.
17. The dialog manager of claim 15, wherein the available reusable subdialogs are rule-based flow controllers.
18. The dialog manager of claim 15, wherein at least one state in the RTN flow controller has a subdialog attribute that is the name of a flow controller invoked as a subdialog.
19. The dialog manager of claim 18, wherein the state in the RTN flow controller having the subdialog attribute that invokes a subdialog further comprises a set of instructions that retrieve values from a parent dialog and set values in the invoked subdialog.
20. The dialog manager of claim 19, wherein each invoked subdialog includes a set of instructions that returns control to the parent dialog and passes retrieved values from the invoked dialog to the parent dialog upon exiting the invoked subdialog.
21. The dialog manager of claim 1, further comprising implementing a local context within a dialog data file associated with the dialog manager.
22. A spoken dialog service having a dialog manager that supports context shifts in a spoken dialog, the dialog manager generated according to a method comprising:
 - selecting a top level dialog flow controller;
 - selecting available reusable subdialogs for being invoked by the top level flow controller, the reusable subdialogs being isolated from application dependencies; and

testing and deploying the spoken dialog service using the selected top level flow controller and selected reusable subdialogs, wherein when a user of the system changes the context of the spoken dialog while in a reusable subdialog, a context shift returns a context shift indication and sets a state in the top level flow controller.

23. The spoken dialog service of claim 22, wherein when a top level flow controller receives a context shift from a subdialog and invokes a new subdialog as part of processing the context shift, the new subdialog inherits information associated with the context shift.

24. The spoken dialog service of claim 23, wherein when a user of the system changes the context of the spoken dialog while in a reusable subdialog, the context shift returns a message to the parent dialog that a context shift has occurred.

25. The spoken dialog service of claim 23, wherein a context shift is triggered by user input and generates a state name where the shift goes.

26. A spoken dialog system having a dialog manager generated according to a method comprising:

selecting a top level flow controller based on application type, the top level flow controller having application-dependent features such that each reusable subdialog can operated independent of the decision model of the top level flow controller and the decision models of other reusable subdialogs;

determining at least one application part below the top level flow controller, each application part requiring a different flow controller;

selecting available reusable subdialogs for each application part; and

testing and deploying the spoken dialog service using the selected top level flow controller and selected reusable subdialogs.

27. The spoken dialog system of claim 26, wherein the dialog manager is further generated by developing a subdialog for each application part not having an available subdialog.
28. The spoken dialog system of claim 26, wherein an available reusable subdialog is an input subdialog.
29. The spoken dialog system of claim 28, wherein the input subdialog further comprises a confirmation component.
30. The spoken dialog system of claim 29, wherein the reusable input subdialog handles silence, rejection, low confidence natural language understanding (NLU) scores and explicit information in an input dialog with a user.
31. The spoken dialog system of claim 30, wherein the reusable input subdialog presents at least one pre-assigned prompt to the user in special circumstances.
32. The spoken dialog system of claim 29, wherein the reusable input subdialog presents a confirmation prompt to the user if an NLU value is returned with a low confidence score.
33. The spoken dialog system of claim 26, wherein the selected available reusable subdialogs are selected independent of their decision models.
34. The spoken dialog system of claim 26, wherein the selected available reusable subdialogs handle context shifts by a user by returning control and a destination state to the top level flow controller.
35. The spoken dialog system of claim 26, wherein the selected available reusable subdialogs contain no application dependencies.

36. The spoken dialog system of claim 26, wherein the selected available reusable subdialogs are selected from the group related to a dialog with the user associated with: a telephone number, a social security number, an account number, an e-mail address and a home or business address.